

CERTIFICATE OF COMPLIANCE

Certificate Number E139109
Report Reference E139109-A6053-UL
Issue Date 2020-MAY-19

Issued to: XP Power LLC
15641 Red Hill Ave, Suite 100
Tustin, CA 92780

**This certificate confirms that
representative samples of**

Power Supplies for Use in Audio/Video, Information and
Communication Technology Equipment
Switching Power Supply, Models: GSP500PS48-XD0666
ans GSP500PSXX;
Where XX is a number between 12-48. May be followed by
additional suffix (“-“ followed by “EF” and/or “SF” and/or “-
P”).

Have been investigated by UL in accordance with the
component requirements in the Standard(s) indicated on
this Certificate. UL Recognized components are incomplete
in certain constructional features or restricted in
performance capabilities and are intended for installation in
complete equipment submitted for investigation to UL LLC.

Standard(s) for Safety: UL 62368-1 and CAN/CSA C22.2 No. 62368-1-14,
Audio/Video, Information and Communication Technology
Equipment Part 1: Safety Requirements

Additional Information: See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL’s Follow-Up Services.

Look for the UL Recognized Component Mark on the product.



Bruce Mahrenholz, Director North American Certification Program
UL LLC

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UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed-(Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	Switching Power Supply
Model:	GSP500PS48-XD0666 GSP500PSXX Where XX is a number between 12-48. May be followed by additional suffix ("-" followed by "EF" and/or "SF" and/or "-P").
Rating:	INPUT ~ 100-240VAC 50/60Hz 6.5A OUTPUT : See Model Differences for details
Applicant Name and Address:	XP POWER L L C 15641 RED HILL AVE, SUITE 100 TUSTIN CA 92780 UNITED STATES

This is to certify that representative samples of the products covered by this Test Report have been investigated 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 LLC ('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.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

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.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared By: Gregory Ray / Project Handler Reviewed By: Randy Johnson / Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

- i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
- ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
- iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The product is a component AC-DC power supply for building-in, open frame type provided with a metal chassis, incorporating primary and SELV components.

The main PWB is secured to the chassis studs by multiple machine screws.

Model Differences

The power supplies in the series are differentiated by the output voltage and current ratings, number of turns of primary/secondary windings in the Transformers (T1 (Power)), and minor differences in the secondary circuit components and PWB layout.

The basic model is provided with U-shaped chassis and top cover.

See below for model ratings:

Convection Cooling Method : 180W output max

Model GSP500PS12: Output Rated: 12Vdc(10.1 - 13.5 Vdc), 15 A max (180 W) @ 50 C ambient; 12Vdc (10.1 - 13.5 Vdc), 7.5 A (90 W) @ 70 C ambient

Model GSP500PS15: Output Rated: 15Vdc(13.5 - 17 Vdc), 12 A (180 W) @ 50 C ambient; 15Vdc(13.5 - 17 Vdc), 6 A (90 W) @ 70 C ambient

Model GSP500PS18: Output Rated: 18Vdc(17.1 - 21 Vdc), 10 A max (180 W) @ 50 C ambient; 18Vdc(17.1 - 21 Vdc), 5 A max (90 W) @ 70 C ambient

Model GSP500PS24: Output Rated: 24Vdc(21.1 - 26 Vdc), 7.5 A (180 W) @ 50 C ambient; 24Vdc(21.1 - 26 Vdc), 3.75 A (90 W) @ 70 C ambient

Model GSP500PS28: Output Rated: 28Vdc(26.1 - 31 Vdc), 6.43 A (180 W) @ 50 C ambient; 28Vdc (26.1 - 31 Vdc), 3.22 A (90 W) @ 70 C ambient

Model GSP500PS33: Output Rated: 33Vdc(31.1 - 33 Vdc), 5.45 A (180 W) @ 50 C ambient; 33Vdc(31.1 - 33 Vdc), 2.72 A (90 W) @ 70 C ambient

Model GSP500PS36: Output Rated: 36Vdc (33.1 - 42 Vdc), 5 A (180 W) @ 50 C ambient; 36Vdc(33.1 - 42 Vdc), 2.5 A (90 W) @ 70 C ambient

Model GSP500PS48: Output Rated: 48Vdc(42.1 - 52 Vdc), 3.75 A (180 W) @ 50 C ambient; 48Vdc (42.1 - 52 Vdc), 1.88 A (90 W) @ 70 C ambient

Forced air cooling method : 500W output max

Model GSP500PS12: Output Rated: 12Vdc (10.1 - 13.5 Vdc), 42 A (500 W) @ 50 C ambient; 12Vdc(10.1 - 13.5 Vdc), 25 A (250 W) @ 70 C ambient

Model GSP500PS15: Output Rated: 15Vdc(13.5 - 17 Vdc), 33.33 A (500 W) @ 50 C ambient; 15Vdc(13.5 - 17 Vdc), 16.67 A (250 W) @ 70 C ambient

Model GSP500PS24: Output Rated: 24Vdc(21.1 - 26 Vdc), 21 A (500 W) @ 50 C ambient; 24Vdc(21.1 - 26 Vdc), 10.5 A (250 W) @ 70 C ambient

Model GSP500PS28: Output Rated: 28Vdc(26.1 - 31 Vdc), 17.86 A (500 W) @ 50 C ambient; 28Vdc(26.1 - 31 Vdc), 8.93 A (250 W) @ 70 C ambient

Model GSP500PS36: Output Rated: 36Vdc(33.1 - 42 Vdc), 13.89 A (500 W) @ 50 C ambient; 36Vdc(33.1 - 42 Vdc), 6.95 A (250 W) @ 70 C ambient

Model GSP500PS48: Output Rated: 48Vdc (42.1 - 52 Vdc), 10.5 A (500 W) @ 50 C ambient; 48Vdc (42.1 - 52 Vdc), 5.25 A (250 W) @ 70 C ambient

Model GSP500PS48-XD0666: Output Rated: 48Vdc, 11.46A (550 W) @ 40°C ambient.

Stand-by Output for all models: 5Vdc, 2A

Fan Output for all models: 12 Vdc, 0.13 A

Units provided with suffix "-EF" provided with End Fan.

Units provided with suffix "-SF" indicates models provided with only one fuse in the line and no fuse in the neutral.

Units provided with suffix "-P" indicates construction variation to current sensing transformer T100. See enclosures for details.

Model GSP500PS48-XD0666 is the same as model GSP500PS48-EF except for output ratings and maximum ambient temperature (Tma).

Test Item Particulars

Classification of use by	Ordinary person
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	For building-in
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Not classified
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	50°C at full rated load and 70°C at 50% rated load
IP protection class	IPX0
Power Systems	TN IT - 230 V L-L
Altitude during operation (m)	5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.9

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of : 50°C at full rated load and 70°C at 50% rated load
- The product is intended for use on the following power systems : TN, IT (230 V L-L)
- The equipment disconnect device is considered to be : To be determined in the end-product.
- 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. If the calculated Clearance exceeded the Creepage, the Creepage was adjusted to the value of clearance.
- Power supplies covered by this report were evaluated for both Class I and Class II (double insulated). Double insulated symbol is optionally provided. Earthing symbol may only be provided for Class I power supplies.

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following product-line tests are conducted for this product : Electric Strength
- The following output circuits are at ES1 energy levels : All Outputs
- The following output circuits are at PS3 energy levels : All Outputs
- 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 (Class I)
- An investigation of the protective bonding terminals has : Not been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral : AC N
- The following end-product enclosures are required : Mechanical, Fire, Electrical
- 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) : T1, and (Class F, 155°C) , T2 and T100 (Class B, 130°C or Class F, 155°C)
- The maximum continuous power supply output (Watts) relied on forced air cooling from : 15 cfm fan applied at chassis edge (near C20 and D60)
- The power supply was evaluated to be used at altitudes up to : "5,000 m"
- When installed in a Class I end product, the power supply shall be mounted in a manner that provides the minimum required Clearance between the primary side of power supply and protectively earthed accessible conductive parts.
- When installed in a Class II end product, the power supply shall be mounted on insulating posts in a manner that provides the minimum required Clearance between the power supply and any accessible conductive parts.
- Heatsinks are floating and considered live. They should not be accessible in the end-product.
- A suitable main disconnect device shall be provided in the end product.
- For models without "SF" suffix: The power supplies covered by this report have a fuse in the neutral of the primary circuit. The need for a marking to warn a service person of the hazards associated with double pole/neutral fusing shall be considered in the end product.
- Consideration to repeating the Touch Current test should be given in the end-product evaluation.
- The power supplies in this report have been subject to Capacitance Discharge testing. Additional testing should not be needed if directly connected to mains e.g. using an appliance inlet, wiring terminals, etc.

Additional Information

Marking Plate is representative of all models.

This report is based on a previous evaluation to IEC 60950-1:2005 (2nd Ed.), Am1:2009 + Am2:20013 under

CBTR Ref. No. E139109-A134-CB-2 including Amendments, CBTC Ref. No. US-25870-UL, US-25870-A1-UL. Based on the previously conducted performance testing, only the tests conducted as part of this investigation were considered necessary.

The following tests were conducted under CTDP SMT/CTF Stage 3 to IEC 60950-1 E2+A1+A2 at XP POWER LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN, CA 92780, USA:

Input: Single-Phase (1.6.2)

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)

Humidity (2.9.1, 2.9.2, 5.2.2)

Determination of Working Voltage; Working Voltage Measurement (2.10.2)

Distance Through Insulation Measurements (2.10.5)

Heating (4.5.1, 1.4.12, 1.4.13)

Ball Pressure (4.5.5, 4.5)

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)

The following additional tests were conducted on a sample of model GSP500PS32 in accordance with IEC 62368-1:2014 (Second Edition) at XP POWER LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN, CA 92780 USA:

Electric Strength Test (5.4.9)

Prospective Touch Voltage and Touch Current Measurement (5.7)

Amendment 1:

This is a technical amendment. Based on a review of product technical documentation such as photos, schematics, and wiring diagrams, changes associated with this report are considered not to affect compliance with the requirements of the standard. Because of this and previously performed testing, no sample or additional testing was considered necessary. Changes and notes:

-IT Power Systems evaluation added.

-Technical Considerations: Altitude statement corrected.

-Conditions of Acceptability: Forced air cooling statement added.

-Energy Source Table and Safeguards Table: MS evaluation removed. To be evaluated in end product.

-Clause 5.4.3.3: Comment corrected.

-Clause 5.4.4: Evaluation corrected as TIW is used.

-Clause F.3.5.3: Comment updated for clarity.

-Table 4.1.2: Additional information about testing added to labels.

-Table 4.1.2: Transformer and Inductor Tape: Note added explaining not relied upon for insulation.

-Table 5.2: Additional applicable data added from original 60950-1 evaluation.

-Table B.2.6: Temperature limits of components L2, L3, L4, U201, U305 corrected to 130C.

-Table B.2.6: Model GSP500PS48 with forced air cooling corrected to Model GSP500PS48-EF.

-Table 5.4.9: Inapplicable test data removed.

-Table 5.4.9: Locations expanded to be more specific.

-Table B.2.5: "Hz" column added to Input Test Table.

Amendment 2:

This is a technical amendment. Based on a review of product technical documentation such as photos, schematics, and wiring diagrams, changes associated with this report are considered not to affect compliance with the requirements of the standard. Because of this and previously performed testing, no sample or additional testing was considered necessary.

Changes and notes:

Fixed instances of typo where suffix is changed from "-R" to "-P"

Additional Standards

The product fulfills the requirements of: EN 62368-1:2014 + A11:2017

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"
DVK, F.3.5.3-Warning to service personnel	<p>Only for models without suffix "SF".</p> <p>"CAUTION: Double pole, neutral fusing. Disconnect mains before servicing." "/"ATTENTION. Double pôle/fusible sur le neutre. Débrancher l'alimentation avant l'entretien."</p>

Special Instructions to UL Representative

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BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
All models	Transformer T1	--	Primary to Secondary	2830	4000	1
BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	--					
BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
	--					
BD1.4	Electric Strength Test Component Exemptions – The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test.					
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BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics