

UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 (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:	Power supply
Model:	<p>UZF-400-x12y, UZF-400-x24y, UZF-400-x36y, UZF-400-x48y, mUZF-400-x12y, mUZF-400-x24y, mUZF-400-x36y, mUZF-400-x48y (UZF-400 series)</p> <p>UZF-400/1200P-x24y, UZF-400/1200P-x30y, UZF-400/1200P-x36y, UZF-400/1200P-x48y, mUZF-400/1200P-x24y, mUZF-400/1200P-x30y, mUZF-400/1200P-x36y, mUZF-400/1200P-x48y (UZF-400/1200P series)</p> <p>(where x maybe alphanumeric character or blank, which denotes control number. where y maybe maximum 20 characters, any alphanumeric character, slash, hyphen or blank, which denotes control number)</p>
Rating:	<p>For UZF-400-x12y, mUZF-400-x12y Input rating: 100-240V ~, 50-60Hz, 5.0A Output rating: - 12Vdc, 26.7A (42 Apeak) (Maximum, at un-forced airflow) - 12Vdc, 36A (42 Apeak) (Maximum, at forced airflow)</p> <p>For UZF-400-x24y, mUZF-400-x24y Input rating: 100-240V ~, 50-60Hz, 5.5A Output rating: - 24Vdc, 16.8A (25 Apeak) (Maximum, at un-forced airflow) - 24Vdc, 21A (25 Apeak) (Maximum, at forced airflow)</p> <p>For UZF-400-x36y, mUZF-400-x36y Input rating: 100-240V ~, 50-60Hz, 5.5A Output rating: - 36Vdc, 11.2A (16.7 Apeak) (Maximum, at un-forced airflow) - 36Vdc, 14A (16.7 Apeak) (Maximum, at forced airflow)</p>

For UZP-400-x48y, mUZP-400-x48y
Input rating: 100-240V ~, 50-60Hz, 5.5A
Output rating:
- 48Vdc, 8.4A (12.5 Apeak) (Maximum, at un-forced airflow)
- 48Vdc, 10.5A (12.5 Apeak) (Maximum, at forced airflow)

For UZP-400/1200P-x24y, mUZP-400/1200P-x24y
Input rating: 200-240V ~, 50-60Hz, 2.8A
Output rating:
- 24Vdc, 16.8A (50 Apeak) (Maximum, at un-forced airflow)
- 24Vdc, 21A (50 Apeak) (Maximum, at forced airflow)

For UZP-400/1200P-x30y, mUZP-400/1200P-x30y
Input rating: 200-240V ~, 50-60Hz, 2.8A
Output rating:
- 30Vdc, 13.4A (40 Apeak) (Maximum, at un-forced airflow)
- 30Vdc, 16.8A (40 Apeak) (Maximum, at forced airflow)

For UZP-400/1200P-x36y, mUZP-400/1200P-x36y
Input rating: 200-240V ~, 50-60Hz, 2.8A
Output rating:
- 36Vdc, 11.2A (33.4 Apeak) (Maximum, at un-forced airflow)
- 36Vdc, 14A (33.4 Apeak) (Maximum, at forced airflow)

For UZP-400/1200P-x48y, mUZP-400/1200P-x48y
Input rating: 200-240V ~, 50-60Hz, 2.8A
Output rating:
- 48Vdc, 8.4A (25 Apeak) (Maximum, at un-forced airflow)
- 48Vdc, 10.5A (25 Apeak) (Maximum, at forced airflow)

Applicant Name and Address:

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Issue Date: 2021-12-12

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Report Reference #

E161936-A6044-UL

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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.

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

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Reviewed By: Tadao Nakayama / Reviewer

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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 building-in type switching power supply.

Model Differences

UZP-400-x24y is basal model.

- Model UZP-400-x36y is identical to UZP-400-x24y except for output rating and transformer (T1) type.

- Model UZP-400-x48y is identical to UZP-400-x24y except for output rating and transformer (T1) type.

- Model UZP-400-x12y is identical to UZP-400-x24y except for input rating, output rating, transformer (T1) type, and output derating.

- Model UZP-400/1200P-x24y is identical to UZP-400-x24y except for input rating, output rating, output derating, transformer (T1) type, and some components.

- Model UZP-400/1200P-x30y is identical to UZP-400/1200P-x24y except for output rating and transformer (T1) type.

- Model UZP-400/1200P-x36y is identical to UZP-400/1200P-x24y except for output rating and transformer (T1) type.

- Model UZP-400/1200P-x48y is identical to UZP-400/1200P-x24y except for output rating and transformer (T1) type.

With or Without the prefix "m" does not affect to safety requirements.

Where x maybe alphanumeric character or blank, which denotes control number. where y maybe maximum 20 characters, any alphanumeric character, slash, hyphen or blank, which denotes control number.

Test Item Particulars

Product group	built-in component
Classification of use by	Ordinary person
Supply Connection	AC Mains
Supply tolerance	+ 10 % / - 15 %
Supply connection – type	Connector
Considered current rating of protective device	20 A; Location: building

Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Special installation location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified Tma (°C)	See Enclosure Id 07-01
IP protection class	IPX0
Power systems	TN IT - 230 V L-L
Altitude during operation (m)	4000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	Approximately 0.57

Technical Considerations

- The product was investigated to the following additional standard : EN IEC 62368-1:2020+A11:2020, UL 62368-1 3rd Edition, Issued December 13, 2019, Revised October 22, 2021, CAN/CSA C22.2 No. 62368-1:19, 3rd Edition, Issued December 13, 2019, Revised October 22, 2021

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 end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Secondary: 261 Vrms / 508 Vpk
- The following output circuits are at ES1 energy levels : All output
- The following output circuits are at PS3 energy levels : All output
- Proper bonding to the end-product main protective earthing termination is : Required
- 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 : Input Connector (CN1) 3 pin
- The following end-product enclosures are required : Electrical, Fire
- 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 (Class F)
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- Peak current of Output is not evaluated in this report.
- The Heating Test shall be evaluated in the end-product.
- The Varistor (ZNR2 and ZNR4) shall be evaluated in the end-product, if fire enclosure provided in the end-product is made from combustible material and located less than 13 mm from the varistor. Applicable requirement is Annex G.8.2.

Additional Information

Regarding the Derating of temperature of Tma and Input Voltage, and sample position, see Enclosure Id: 07-01 for details.

[UZP-400 series]

Models UZP-400-x36y and UZP-400-x48y are identical to UZP-400-x24y except for output rating. Also, Model UZP-400-x12y is identical to UZP-400-x24y except for input rating, output rating. Due to the similarity of circuit, following tests were conducted with UZP-400-x24y as a representative.

- CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CONNECTOR
- TOUCH CURRENT MEASUREMENT – EARTHED ACCESSIBLE CONDUCTIVE PARTS – SINGLE-PHASE EQUIPMENT ON TN OR TT SYSTEM
- TOUCH CURRENT MEASUREMENT – EARTHED ACCESSIBLE CONDUCTIVE PARTS – SINGLE-PHASE EQUIPMENT ON IT SYSTEM
- SIMULATED SINGLE FAULT CONDITIONS

CLASSIFICATION OF ELECTRICAL ENERGY SOURCES was conducted with model UZP-400-x48y as the most severe model.

Models UZP-400-x24y, UZP-400-x36y, and UZP-400-x48y has 3 type pattern layout, type 3700P1, 3700P13, and 3700P15.

The difference between type 3700P1 and 3700P13 is IC101. Also, the difference between type 3700P13 and 3700P15 is deletion of Bleeder Resistors (R1, R3, R5) and addition of Connector (CN9). Since electrical characteristic of each IC101 are same and the difference of pattern layout does not affect safety, Bleeder Resistors (R1, R3, R5) are 0ohm resistors and does not affect test result, test was conducted with type 3700P1 as representative.

[UZP-400/1200P series]

Models UZP-400/1200P-x30y, UZP-400/1200P-x36y, UZP-400/1200P-x48y are identical to UZP-400/1200P-x24y except for output rating. Due to the similarity of circuit, following tests were conducted with UZP-400/1200P-x24y as a representative.

- SIMULATED SINGLE FAULT CONDITIONS

Also, Due to the similarity of circuit between UZP-400 series and UZP-400/1200P series, following tests were conducted with UZP-400-x24y as a representative.

- CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CONNECTOR
- TOUCH CURRENT MEASUREMENT – EARTHED ACCESSIBLE CONDUCTIVE PARTS – SINGLE-PHASE EQUIPMENT ON TN OR TT SYSTEM
- TOUCH CURRENT MEASUREMENT – EARTHED ACCESSIBLE CONDUCTIVE PARTS – SINGLE-PHASE EQUIPMENT ON IT SYSTEM

CLASSIFICATION OF ELECTRICAL ENERGY SOURCES was conducted with model UZP-400/1200P-x48y as the most severe model.

This product has 4 type pattern layout, type 3725P1, 3725P13, 3725P14, and 3725P15.

The difference between type 3725P1 and 3725P13 is IC101. Also, the difference between type 3725P13 and 3725P14 is protection function. And the difference between type 3725P14 and 3725P15 is deletion of Bleeder Resistors (R1, R3, R5). Since electrical characteristic of each IC101 are same and the difference of pattern layout does not affect safety, Bleeder Resistors (R1, R3, R5) are 0ohm resistors and does not affect test result, and type 3725P1 does not have this protection function, test was conducted with type 3725P1 as representative.

(for CB Application)

- UL Standard has requirements that meet or exceed relevant IEC requirements.

Copy of marking plate of represent models attached in the Copy of marking plate can be representative of other series of models because this copy of marking plate includes all required items and same items are described in the marking plate of other series models.

National differences for Singapore provided in Enclosure Id: 07-02.

Additional Standards

The product fulfills the requirements of:

Markings and Instructions	
Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's or Recognized Company's 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)
Fuses – replaceable by ordinary or instructed person	(component ID: F1, F2), Ratings (10AL or 10AH, 250V) and (T) located on or adjacent to fuse or fuseholder
Special Instructions to UL Representative For transformer test - When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in Production-Line Testing Requirements be conducted at the component manufacturer.	

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), type MT1801x, MT7801x, MT1802x, MT7802x, MT1803x, MT7803x, MT1804x, MT7804x, MT1808x, MT7808x, MT1809x, MT7809x, MT1810x, MT7810x, MT1816x, MT7816x	--	Primary to Secondary	4000pk	4000	1
BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	All models					
BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
	N/A					
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.					
	N/A					

BE1.0		Sample and Test Specifics for Follow-Up Tests at UL			
Model	Component	Material	Test	Sample (s)	Test Specifics
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