

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2019-05-09 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Complementary CCN:	N/A
Product:	Power Supply
Model:	UZD-150-HV/24Vx, mUZP-150-12x, mUZP-150-18x, mUZP-150-24x, mUZP-150-48x, UZP-150-12x, UZP-150-18x, UZP-150-24x, and UZP-150-48x (where x maybe maximum 20 characters, any alphanumeric character, hyphen, slash or blank)
Rating:	<p><UZD-150-HV/24Vx> DC Input: 135-370Vdc, 2.23A DC Output: DC Output: 24V, 6.3A (maximum 11.3A, peak 16.7A) Total DC Output Wattage without forced airflow: 151.2W Total DC Output Wattage with forced airflow: 271.2W</p> <p><mUZP-150-12x, UZP-150-12x> AC Input: AC100-240V, 3.0A, 50-60Hz DC Output: 12V, 12.5A (maximum 21A, peak 33.4A) Peak DC Output Wattage: 400.8W (See Enclosure Id. 07-04 for details.) Total DC Output Wattage without forced airflow: 150W Total DC Output Wattage with forced airflow: 252W</p> <p><mUZP-150-18x, UZP-150-18x> AC Input: AC100-240V, 2.9A, 50-60Hz DC Output: 18V, 8.4A (maximum 14A, peak 22.3A) Peak DC Output Wattage: 401.4W (See Enclosure Id. 07-04 for details.) Total DC Output Wattage without forced airflow: 151.2W Total DC Output Wattage with forced airflow: 252W</p> <p><mUZP-150-24x, UZP-150-24x> AC Input: AC100-240V, 3.2A, 50-60Hz</p>

	<p>DC Output: 24V, 6.3A (maximum 11.3A, peak 16.7A)</p> <p>Peak DC Output Wattage: 400.8W (See Enclosure Id. 07-04 for details.) Total DC Output Wattage without forced airflow: 151.2W Total DC Output Wattage with forced airflow: 271.2W</p> <p><mUZP-150-48x, UZP-150-48x> AC Input: AC100-240V, 3.1A, 50-60Hz DC Output: 48V, 3.2A (maximum 5.7A, peak 8.4A)</p> <p>Peak DC Output Wattage: 403.2W (See Enclosure Id. 07-04 for details.) Total DC Output Wattage without forced airflow: 153.6W Total DC Output Wattage with forced airflow: 273.6W</p>
Applicant Name and Address:	<p>NIPRON CO LTD 2-57 OHAMA-CHO AMAGASAKI-SHI HYOGO-KEN 660-0095 JAPAN</p>

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.

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Handler

Reviewed By: Tadao Nakayama / 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

This equipment is component type power supply.

Optional Devices:

The following optional devices may be installed up to two at once.

- Stand-by Power Supply (5V output or 12V output) *
- Capacitor Board 1 (two capacitors or three capacitors) *
- Capacitor Board 2 **
- Capacitor Pack **
- Resistor Board **

The devices marked * are connected at Connector (CN7) in main board.

The devices marked ** are connected at Connector (CN3) in main board. Those other than Resistor Board are connected with harness.

Any combinations of the devices connected to CN7 and CN3 are available.

Model Differences

Model UZP-150-48x is the basic model in this Test Report.

Models UZP-150-12x, UZP-150-18x, and UZP-150-24x are similar to Model UZP-150-48x except for items as follows.

- Electrical rating
- Model designation
- Transformer (T1)
- Secondary Circuit for Output

Suffixes x denote control numbers which do not affect safety. (Where x maybe maximum 20 characters, any alphanumeric character, hyphen, slash or blank)

Models mUZP-150 series are identical to Models UZP-150 series, except for Primary Fuse (mUZP-150 series: Fuses (F1, F2) provided in live and neutral line, UZP-150 series: Fuse (F1) provided in live line only (Fuse type is

same.)) and Primary Wiring used in Transformer (T1) between 2pin and 3pin (mUZP-150 series: Triple Insulation Wire used. UZP-150 series: Polyurethane enameled copper wire used.).

And Pattern/Component Layout of Main Board for Models mUZP-150 series is same as that of Alternate Main Board for Models UZP-150 series.

Model UZD-150-HV/24Vx is identical to Model UZP-150-24x except for model designation, input rating and some components of primary circuits.

Test Item Particulars

Equipment mobility	for building-in
Connection to the mains	not directly connected to the mains
Operating condition	continuous
Access location	for building-in
Over voltage category (OVC)	OVC II
Mains supply tolerance (%) or absolute mains supply values	+10% / -10% (-15% to -10% with output derating)
Tested for IT power systems	Yes (only for Norway)
IT testing, phase-phase voltage (V)	230 V
Class of equipment	Class I (earthed)
Considered current rating of protective device as part of the building installation (A)	20 A
Pollution degree (PD)	PD 2
IP protection class	IP X0
Altitude of operation (m)	up to 4000 m
Altitude of test laboratory (m)	approximately 10 to 20 m
Mass of equipment (kg)	approximately 300 g

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : See Enclosure Id. 07-04 (Maximum Normal Load Condition (Test Condition)) for details.
- The product is intended for use on the following power systems : TN / IT (only for Norway)
- 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).

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 Production-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 : 270 Vrms / 640 Vpk, 326 Vrms / 562 Vpk w/ Stand-by Power Supply
- The following secondary output circuits are SELV : DC output of all models
- The following secondary output circuits are at hazardous energy levels : DC output of all models
- The power supply terminals and/or connectors are : Suitable for factory wiring only
- 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. Cover and Chassis of Capacitor Pack shall be properly earthed in the end-product.
- An investigation of the protective bonding terminals has : Not been conducted
- 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) : Transformer (T1) (Class B) / Transformer (T500) (Class B) in Stand-by Power Supply
- The following end-product enclosures are required : Electrical, Fire
- The Heating Test shall be evaluated in the end-product. If Capacitor Pack is located in operator access area in the end-product, special consideration shall be given to the temperature of the Cover.
- Unless otherwise specified, Thermistor (TH1) and Resistor (R90) were by-passed for inactivate.

Additional Information

Maximum Normal Load Condition (Test Condition): See Enclosure Id. 07-04 (Maximum Normal Load Condition (Test Condition)) for details.

Only Humidity Test, Heating Test and Electric Strength Test were conducted on Models mUZP-150 series. Heating Test was conducted on Model mUZP-150-18x only, because under consideration of Heating Test results of Models UPZ-150 series, Model UZP-150-18x is the most sever model.

(CB only)

This CBTR is a reissue of the CBTR No. E161936-A89-CB-2, E161936-A89-CB-2 (Amendment 1), E161936-A89-CB-2 (Amendment 2), and E161936-A89-CB-2 (Amendment 3). This reissue report is to cover the following modification.

- Addition of similar model UZD-150-HV/24Vx.
- Correction of Manufacturer of Inductors (LF1, LF2), Type ET24-662B as below.
From: Excel king Japan Co., Ltd.
To: Excel king Japan Co., Ltd. or Chaoyue Precision Electronics Co., Ltd.
- Addition of alternate Bobbins of Alternate Inductors (LF1, LF2), Type 1403G6.
- Replacement of Enclosure Id. 07-10.

Only limited tests were considered necessary.

In this Test Report, CENELEC mark license indicating compliance to EN standard was used to verify component compliance to IEC standard because the standards are technically equivalent.

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

Optical Isolator (PC1) in Capacitor Board 2 is not provided for CB.

National Differences of China was evaluated. See Enclosure Id. 07-03 (National Differences for China) for details. (For information only since the ND/GD TRF latest revision does not match the latest revision of IEC Standard TRF used for evaluation)

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.

Additional Standards

The product fulfills the requirements of:

Markings and Instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	
Power rating - Company identification	Listee's or Recognized companys name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
1.7.6 - Fuses - Rating	For Fuse (F500) in Stand-by Power Supply, type located adjacent to fuse, and rating current and voltage are contained in component list provided to service person.

Special Instructions to UL Representative

Inspect the transformer(s) listed below per AA1.1 - C.
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 below 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
UZD-150-HV/24Vx, mUZP-150-12x, mUZP-150-18x, mUZP-150-24x, mUZP-150-48x, UZP-150-12x, UZP-150-18x, UZP-150-24x, and UZP-150-48x	Transformer (T1)	N/A	PRI to SEC	3000	4242	1
Stand-by Power Supply (5V Output)	Transformer (T500)	N/A	PRI to SEC	3000	4243	1
Stand-by Power Supply (12V Output)	Transformer (T500)	N/A	PRI to SEC	3000	4243	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
N/A	--	--	--	--	--