

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:	DC Power Supply
Model:	HPC1U-400Px (where x maybe maximum 50 characters, any alphanumeric character, hyphen or blank, which denotes control number)
Rating:	AC INPUT: 100 V-240 V, 3.8 A-1.6 A, 50/60 Hz DC OUTPUT: CH1: 3.3 Vdc, 8 A (maximum 16 A, peak 20 A) CH2: 5 Vdc, 8 A (maximum 16 A, peak 20 A) CH3: 12 Vdc, 19 A (maximum 25 A, peak 30 A) CH4: -12 Vdc, 0.5 A (maximum 0.5 A, peak 0.5 A) CH5: 5VSB, 1.0 A (maximum 1.5 A, peak 2.0 A) Peak: maximum 5 seconds Interval: 45 seconds Total Wattage: 305 W maximum (CH1+CH2: 90 W maximum, CH3: 300 W maximum, CH4: 6 W maximum, CH5: 7.5 W maximum) Peak Wattage: 400 W maximum (CH1+CH2: 120 W maximum, CH3: 360 W maximum, CH4: 6 W maximum, CH5: 10 W maximum)
Applicant Name and Address:	NIPRON CO LTD 2-57 OHAMA-CHO AMAGASAKI-SHI HYOGO-KEN 660-0095 JAPAN

Issue Date: 2013-02-04

Page 2 of 18

Report Reference #

E161936-A82-UL

Revision Date: 2021-04-27

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: Yuta Iida / Project Handler

Reviewed By: Tadao Nakayama / Reviewer

Copyright

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.

Model Differences

HPC1U-400Px (where x maybe maximum 50 characters, any alphanumeric character, hyphen or blank):
Suffixes x denote control number which does not affect safety.

Test Item Particulars

Mass of equipment (kg)	approximately 1.0 kg
Equipment mobility	for building-in
Connection to the mains	pluggable equipment pluggable A
Operating condition	continuous
Access location	operator accessible
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 3000 m
Altitude of test laboratory (m)	approximately 10 to 20 m

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 40°C for 100% load / 60°C for 60% load
- The means of connection to the mains supply is : Pluggable A / Detachable Power Supply Cord
- The product is intended for use on the following power systems : TN / IT (only for Norway)

- The equipment disconnect device is considered to be : Appliance Inlet
- 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 unit was evaluated to be operated up to 3,000 m above sea level per Annex G and the multiplication factor (1.14), linear interpolation used) of table A.2 of IEC 60664-1:1992+A1:2000+A2:2002. was applied to determine the minimum required clearance.
- The following were investigated as part of the protective earthing/bonding : Printed Wiring Board Trace See Enclosure Id. 05-01 (Printed Wiring Board Trace Diagram of HPC1U-400Px) for details.

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 : Earthing Continuity and Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : 369 Vrms, 616 Vpk
- The following secondary output circuits are SELV : CH1: 3.3 Vdc, CH2: 5 Vdc, CH3: 12 Vdc, CH4: -12 Vdc, and CH5: 5VSB
- The following secondary output circuits are at hazardous energy levels : CH3: 12 Vdc
- The following secondary output circuits are at non-hazardous energy levels : CH1: 3.3 Vdc, CH2: 5 Vdc, CH4: -12 Vdc, and CH5: 5VSB
- 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 : Not required
- An investigation of the protective bonding terminals has : Been conducted
- The following end-product enclosures are required : Electrical and Fire (except chassis at Appliance inlet side with optional Power Switch and optional Fan Guard)
- The Heating Test shall be evaluated in the end-product.
- The Volumes (VR51 and VR52) for the output voltage adjustments are intended to adjust at factory only.
- The power supply employs a fuse in its line phase and neutral phase. Suitable marking or statement in the service manual in accordance with sub-clause 2.7.6 shall be provided with end-product.
- The Power Switch has not been evaluated as main disconnect device in accordance with sub-clause 3.4.
- If optional Power Switch and optional Fan Guard provided, chassis at Appliance Inlet side has been evaluated as an external fire/electrical enclosure. If optional Power Switch or optional Fan Guard not provided, shall be evaluated in the end-product.

Additional Information

Variable speed outflow fan is mounted and is controlled by Thermistor (TH51). According to manufacturer information, the fan speed is maximum speed when 100% load condition or ambient minimum 40°C condition. Fan speed is maximum speed in Heating (Thermal Requirements) Test.

This equipment may be provided with Back-Up Function with Capacitor Pack, if AC mains supply stops, output is supplied from Capacitor Pack.

Maximum Normal Load (Test Conditions): See Enclosure Id. 07-11 (Test Conditions) for details.

<For CB Application>

National Differences of Japan according to J3000(H25) was evaluated. See Enclosure Id. 07-13 for details.

Optical Isolator (PC11), Type PS2561A-1 and Optical Isolators (PC101, PC102, PC103), Type PS2581AL1, Fan, Type U40G12BHA5, 1608KL-04W-B50 are certified (approved) under IEC60950-1(ed.2) + Am.1 only. The certification does not include IEC60950-1 A2:2013. However, it can be accepted because the standard requirements, both IEC60950-1 A1:2009 and IEC60950-1 A2:2013 for Optical Isolator and Fan are technically equivalent. Recognizing NCBs may require additional information, testing and evaluation.

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.

National Differences were partially reissued and Enclosure ID number was updated due to the change of TRF template.

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: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013, GB4943.1-2011

Markings and Instructions

Clause Title	Marking or Instruction Details
1.7.8.3 Symbols - On/Off switch	All other controls to be marked with
1.7.6 Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
1.7.1 Power rating - Ratings	Ratings (voltage, frequency/dc, current)
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
1.7.1 Power rating - Model	Model Number

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
HPC1U-400Px (where x maybe maximum 50 characters, any alphanumeric character, hyphen or blank, which denotes control number)	Transformers (T11, T12)	N/A	PRI to SEC	3000	4242	1
BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	N/A					
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	--	--	--	--	--	