

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (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:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Product:	DC-DC Converter
Model:	CN50A24-xyza and CN100A24-xyza (x = 5, 12, 15 or 24, y = "/" or blank, z = "CO", "LT", "LTCO" or blank, a = "T" or blank)
Rating:	Input: 14.4 - 36 Vdc, 5.5 A (Model CN50A24 series) 14.4 - 36 Vdc, 11.0 A (Model CN100A24 series) Output: 5 Vdc, 10 A (Model CN50A24-5) 12 Vdc, 4.2 A (Model CN50A24-12) 15 Vdc, 3.4 A (Model CN50A24-15) 24 Vdc, 2.1 A (Model CN50A24-24) 5 Vdc, 20 A (Model CN100A24-5) 12 Vdc, 8.4 A (Model CN100A24-12) 15 Vdc, 6.7 A (Model CN100A24-15) 24 Vdc, 4.2 A (Model CN100A24-24)
Applicant Name and Address:	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195 JAPAN

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: Tadao Nakayama

Reviewed by: Tetsuo Iwasaki

Issue Date: 2011-07-19
2018-09-03

Page 2 of 10

Report Reference #

E122103-A108-UL

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 DC-DC Converter intended for building in to an end product.

Model Differences

See Enclosure Id. 7-01 for details.

With suffix /LT models were identical to without suffix /LT models except for model designation, pattern layout for Inductors (L1, L2), and Inductors (L1, L2).

Suffix "CO" denotes with coating material.

Suffix "/T" denotes no threads in the corner.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : No direct connection to the mains
- Operating condition : continuous
- Access location : N/A
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : N/A
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Not classified
- Considered current rating of protective device as part of the building installation (A) : 20
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 3000
- Altitude of test laboratory (m) : approximately 10 to 20
- Mass of equipment (kg) : approximately 0.1
- The power supply is intended to be supplied from an isolated secondary circuit evaluated for reinforced insulation between input and output circuits.
- Maximum operating Baseplate temperature is 100°C. See Enclosure Id. 7-01 for details.
- DC/DC Converter was used and tested with the external components of the circuit as follows. 1.

Input Fuse, rated 250 V, 15 A for Model CN100A24 and Input Fuse rated 250 V, 8 A for Model CN50A24. 2. Input Filter 3. Electrolytic Capacitors for the rectifying circuits of primary. 4. Smoothing Electrolytic Capacitors for the output circuits. 5. Heatsink secured to DC/DC Converter.

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 secondary output circuits are SELV: 5 Vdc (Model CN50A24-5), 12 Vdc (Model CN50A24-12), 15 Vdc (Model CN50A24-15), 24 Vdc (Model CN50A24-24), , 5 Vdc (Model CN100A24-5), 12 Vdc (Model CN100A24-12), 15 Vdc (Model CN100A24-15), 24 Vdc (Model CN100A24-24)
- The following secondary output circuits are at non-hazardous energy levels: 5 Vdc (Model CN50A24-5), 12 Vdc (Model CN50A24-12), 15 Vdc (Model CN50A24-15), 24 Vdc (Model CN50A24-24), , 5 Vdc (Model CN100A24-5), 12 Vdc (Model CN100A24-12), 15 Vdc (Model CN100A24-15), 24 Vdc (Model CN100A24-24)
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- 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 end-product enclosures are required: Electrical and Fire
- The following secondary output circuits are ES1: 5 Vdc (Model CN50A24-5) , 12 Vdc (Model CN50A24-12) , 15 Vdc (Model CN50A24-15) , 24 Vdc (Model CN50A24-24) , , 5 Vdc (Model CN100A24-5) , 12 Vdc (Model CN100A24-12) , 15 Vdc (Model CN100A24-15) , 24 Vdc (Model CN100A24-24)
- The following secondary output circuits are at PS3 energy level: 5 Vdc (Model CN50A24-5) , 12 Vdc (Model CN50A24-12) , 15 Vdc (Model CN50A24-15) , 24 Vdc (Model CN50A24-24) , , 5 Vdc (Model CN100A24-5) , 12 Vdc (Model CN100A24-12) , 15 Vdc (Model CN100A24-15) , 24 Vdc (Model CN100A24-24)
- Humidity conditioning has been conducted by tropical condition.
- Classification of PIS has not been conducted. Therefore, all electrical components and conductors including printed wirings were assumed to be arcing/resistive PIS.
- This component has been evaluated in "control of fire spread" method assuming appropriate fire enclosure is provided in end product. Unless the fire enclosure is made of non-combustible or V-0 material, the separation from the PIS shall be considered.

Additional Information

N/A

Additional Standards

The product fulfills the requirements of: The product fulfills the requirements of: UL 62368-1, 2nd Edition, 2014-12-01, CAN/CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12

Markings and instructions

Clause Title	Marking or Instruction Details
1.7.1 Power rating - Ratings	Ratings (voltage, frequency/dc, current)
1.7.1 Power rating - Company	Listee's or Recognized company's name, Trade Name, Trademark or File Number

Issue Date: 2011-07-19
2018-09-03

Page 5 of 10

Report Reference #

E122103-A108-UL

identification	
1.7.1 Power rating - Model	Model Number