

UL TEST REPORT AND PROCEDURE

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| 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) |
| Product: | Non-Isolated Power Supply, DC-DC Converter |
| Model: | i3A4W***A%%V-0xx(-R), where *** represents rated output current between 0-10A, %%% represents rated output voltage between 0-30Vdc, 0xx indicates a number or alphanumeric character which affects non safety related features, and where optional -R indicates RoHS compliance |
| Rating: | Input: 9-53Vdc, 10A Max Output: 0-30Vdc, 10A, 100W Max |
| Applicant Name and Address: | TDK-LAMBDA AMERICAS INC SUITE 100 3320 MATRIX DR RICHARDSON TX 75082 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: Michael J. Howell

Reviewed by: Scott Corley

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 units are high density Non-Isolated Power Supply, DC-DC Converter modules. The converters are provided with input terminal pins for factory installation onto a printed wiring board with a connection to a dc source of supply and output terminal pins.

Model Differences

All models are identical except for minor changes to the components based upon the output voltage rating of the unit.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : No direct connection
- Operating condition : continuous
- Access location : N/A
- Over voltage category (OVC) : for building-in
- 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 : Class III (supplied by SELV)
- 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 2000 m
- Altitude of test laboratory (m) : not more than 2000 m
- Mass of equipment (kg) : less than 1 kg
- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 25°C

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:

- Power to the DC-DC Converter is intended to be supplied by isolated secondary circuitry in an end-use application.
- All Units were tested with an external 20A fuse during Abnormal Operation and Component Fault testing.
- The following secondary output circuits are SELV: All
- The following secondary output circuits are at non-hazardous energy levels: All outputs except for Model i3A4W005A150V-0XX
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The maximum investigated branch circuit rating is: 20A,
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Mechanical/, Fire/, Electrical
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing: The PWB is rated 130°C. ,
- The subject units are intended to be supplied from a SELV input.

Additional Information

N/A

Markings and instructions

| Clause Title | Marking or Instruction Details |
|---|---|
| 1.7.1 Power rating - Ratings | Optional, (voltage 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

Listee's or Recognized company's name, Trade Name (TDK-Lambda and/or TDK-Lambda Americas Inc), Trademark or File Number may be located on the unit or the smallest packaging. The rating of the unit is embedded as part of the part number.