



Test Report issued under the responsibility of:



TEST REPORT
IEC 60950-1
Information technology equipment – Safety –
Part 1: General requirements

Report Number.....: 31081075.012
Date of issue: 14 July 2015
Total number of pages..... 65 + Attachments

Applicant’s name: TDK-Lambda Americas Inc.
Address.....: 401 Mile of Cars Way, Suite 325
National City, CA, 91950 USA

Test specification:
Standard: IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
and EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 +
A2:2013
Test procedure: CB Scheme
Non-standard test method: N/A

Test Report Form No......: IEC60950_1F
Test Report Form(s) Originator....: SGS Fimko Ltd
Master TRF.....: Dated 2014-02

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

| | | |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test item description | Switch Mode Power Supply | |
| Trade Mark | TDK-Lambda | |
| Manufacturer | Same as applicant | |
| Model/Type reference | 1) CPFE1000F-12, 2) CPFE1000F-28, 3) CPFE1000F-48 | |
| Ratings | Input: 100–240V, 50–60Hz (Operating Range 85–265V, 47–63Hz), 12A (CPFE1000F-12) / 16A (CPFE1000F-28, CPFE1000F-48) Output: 1) 9.6–14.4 (12) V dc, 60 A, 720 W max 2) 22.4–33.6 (28) V dc, 36 A, 1008 W max 3) 38.4–57.6 (48) V dc, 21 A, 1008 W max | |
| Testing procedure and testing location: | | |
| <input checked="" type="checkbox"/> | CB Testing Laboratory: | TÜV Rheinland of North America, Inc. |
| Testing location/ address | | 1279 Quarry Lane, Suite A, Pleasanton, CA 94566 |
| <input type="checkbox"/> | Associated CB Testing Laboratory: | |
| Testing location/ address | | |
| Tested by (name + signature) | | Duy Nguyen  <small>Digitally signed by Duy Nguyen DN: cn=Duy Nguyen, o=TÜV Rheinland of North America, Inc. email=duynguyen@tuev.com, c=US Date: 2013.07.14 14:48:07-07'00</small> |
| Approved by (name + signature) | | Hai Nguyen  |
| <input type="checkbox"/> | Testing procedure: TMP/CTF Stage 1: | |
| Testing location/ address | | |
| Tested by (name + signature) | | |
| Approved by (name + signature) | | |
| <input type="checkbox"/> | Testing procedure: WMT/CTF Stage 2: | |
| Testing location/ address | | |
| Tested by (name + signature) | | |
| Witnessed by (name + signature) | | |
| Approved by (name + signature) | | |
| <input type="checkbox"/> | Testing procedure: SMT/CTF Stage 3 or 4: | |
| Testing location/ address | | |
| Tested by (name + signature) | | |
| Witnessed by (name + signature) | | |
| Approved by (name + signature) | | |
| Supervised by (name + signature) | | |

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| <p>List of Attachments (including a total number of pages in each attachment):</p> <ol style="list-style-type: none"> 1. National Differences (31 pages) 2. Photographs (6 pages) 3. Schematics (1 page) 4. Capacitance Discharge Plots (2 pages) 5. CB Certificate for Power Module (2 pages) | |
| <p>Summary of testing:</p> | |
| <p>Tests performed (name of test and test clause):</p> <p>Clause 1.6.2 Input Test Clause 1.7.11 Durability of Marking Test Clause 2.1.1.7 Capacitance Discharge Test Clause 2.2 SELV circuits Clause 2.6.3 Earthing Test Clause 2.10 Creepage and clearance Clause 4.5 Temperature Test Clause 5.1 Touch current measurement Clause 5.2 Electric strength Test Clause 5.3 Abnormals Annex Q VDR,s</p> <p>Refer to body of report and appended tables for details of each test.</p> <p>All tests performed as part of earlier evaluations per CB reports with numbers 31081075.001. No new testing per this report.</p> <p><u>31081075.012</u> No testing</p> | <p>Testing location:</p> <p>All tests performed as part of earlier evaluations per CB reports with numbers 31081075.001. No new testing per this report.</p> |
| <p>Summary of compliance with National Differences:</p> <p>List of countries addressed EU Group Differences, EU Special National Conditions, United States, Canada</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of IEC 60950-1:2005 + Am 1:2009 + Am 2:2013; EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013</p> | |

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBS that own these marks.

TDK-Lambda
MODEL No.: CPFE1000F-12
INPUT: 100-240 V (-), 12A, 50-60 HZ
INPUT POWER: 1000W MAX.
DC OUTPUT POWER: 720W MAX.
5.6-14.4 VDC (---) @ 60A MAX.
100°C MAX. BASEPLATE TEMP.

INPUT | ACL
| GND
| ACN

SEE MANUAL FOR CONNECTIONS AND OTHER INPUT INFORMATION

REV. P2

MADE IN XXXXXXXX

XXXXXXXXXXXX

AUX SIGNALS
1 -SENSE
2 +SENSE
3 COM
4 ON/OFF (RTN)
5 ON/OFF (+)
6 AUX
7 CURRENT SHARE
8 TRM
9 ENA
10 I/O

-V
+V

TDK-Lambda
MODEL No.: CPFE1000F-28
INPUT: 100-240 V (-), 16A, 50-60 HZ
INPUT POWER: 1300W MAX.
DC OUTPUT POWER: 1008W MAX.
22.4-33.6 VDC (---) @ 36A MAX.
100°C MAX. BASEPLATE TEMP.

INPUT | ACL
| GND
| ACN

SEE MANUAL FOR CONNECTIONS AND OTHER INPUT INFORMATION

REV. P2

MADE IN XXXXXXXX

XXXXXXXXXXXX

AUX SIGNALS
1 -SENSE
2 +SENSE
3 COM
4 ON/OFF (RTN)
5 ON/OFF (+)
6 AUX
7 CURRENT SHARE
8 TRM
9 ENA
10 I/O

-V
+V

TDK-Lambda
MODEL No.: CPFE1000F-48
INPUT: 100-240 V (-), 16A, 50-60 HZ
INPUT POWER: 1300W MAX.
DC OUTPUT POWER: 1008W MAX.
33.6-57.6 VDC (---) @ 21A MAX.
100°C MAX. BASEPLATE TEMP.

INPUT | ACL
| GND
| ACN

SEE MANUAL FOR CONNECTIONS AND OTHER INPUT INFORMATION

REV. P2

MADE IN XXXXXXXX

XXXXXXXXXXXX

AUX SIGNALS
1 -SENSE
2 +SENSE
3 COM
4 ON/OFF (RTN)
5 ON/OFF (+)
6 AUX
7 CURRENT SHARE
8 TRM
9 ENA
10 I/O

-V
+V

| | |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test item particulars | |
| Equipment mobility | <input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in |
| Connection to the mains | <input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input checked="" type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains |
| Operating condition | <input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time: |
| Access location | <input type="checkbox"/> operator accessible <input checked="" type="checkbox"/> restricted access location |
| Over voltage category (OVC) | <input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other: |
| Mains supply tolerance (%) or absolute mains supply values | -15/+10% |
| Tested for IT power systems | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| IT testing, phase-phase voltage (V) | |
| Class of equipment | <input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified |
| Considered current rating of protective device as part of the building installation (A) | 16 (Europe), 20 (US/CAN) |
| Pollution degree (PD) | <input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3 |
| IP protection class | IPX0 |
| Altitude during operation (m) | 3000 |
| Altitude of test laboratory (m) | 3000 |
| Mass of equipment (kg) | 2.4 |

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|-----------------------------------------------------|------------------------------------------------------------------------------------------------|
| Possible test case verdicts: | |
| - test case does not apply to the test object | N/A |
| - test object does meet the requirement | P (Pass) |
| - test object does not meet the requirement | F (Fail) |
| Testing | |
| Date of receipt of test item | 05/24/2010 (31081075.001) 09/27/2012 (31081075.008) N/A-31081075.010 N/A-31081075.012 |
| Date (s) of performance of tests | 05/24-27/2010 (31081075.001) N/A-31081075.010 N/A-31081075.012 |

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| General remarks: | |
| <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> | |
| Manufacturer's Declaration per sub-clause 4.2.5 of IEC60950: | |
| The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... : | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable |
| When differences exist; they shall be identified in the General product information section. | |
| Name and address of factory (ie s)..... : TDK-LAMBDA MALAYSIA SDN BHD PLO33 Kawasan Perindustrian Senai 81400 Senai, Malaysia | |
| General product information: | |
| The equipment is a switch-mode power supply. All models are constructionally equivalent from a safety-critical standpoint and differ only in output voltage and current due to variations in output resistance values. | |
| Conditions of Acceptability: | |
| 1. The units are considered to operate under the conditions of: – Pollution Degree 2 environment – Equipment mobility: Component for building-in. – Class of equipment: Class I | |
| 2. Model CPFE1000F-12 maximum ambient at 60°C from 85 to 265 V ac input (Max baseplate temperature: 85°C) | |
| 3. Models CPFE1000F-28 and CPFE1000F-48 maximum ambient at 60°C from 170 to 265 V ac input, linearly de-rated to 50°C at 85 V ac input. (Max baseplate temperature: 85°C at 170 to 265 V ac operation, 70°C below 170 V ac operation) | |
| 4. Fire enclosure requirements must be addressed in the end-use product. | |
| 5. Re-evaluation of the heating, dielectric, and bonding tests need to be conducted in the end-use product. | |
| 6. Short-circuit back-up protection in accordance with clause 2.7.3 shall be evaluated in end-use product. | |
| 7. Suitability of enclosure shall be provided in end product. | |
| 8. Power supply outputs are not investigated for limited power circuits. | |

| Abbreviations used in the report: | | | |
|---------------------------------------------|-------------|----------------------------|--------------|
| - normal conditions | N.C. | - single fault conditions | S.F.C |
| - functional insulation | OP | - basic insulation | BI |
| - double insulation | DI | - supplementary insulation | SI |
| - between parts of opposite polarity | BOP | - reinforced insulation | RI |
| Indicate used abbreviations (if any) | | | |

| History of CB report: | |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31081075.001 | Original CB-Report |
| 31081075.004 | New report because of correction of factory location from: TDK-LAMBDA MALAYSIA SDN BHD, Lot 2&3, Batu 9-3/4 Kawasan Perindustrian, Bandar Baru Jaya Gading, Kuantan, Pahang 26070, PAH Malays to: TDK-LAMBDA MALAYSIA SDN BHD, PLO33 Kawasan Perindustrian Senai, 81400 Senai, Malaysia |
| 31081075.008 | New report. This report covers the upgrade to IEC 60950-1:2005 + A1 |
| 31081075.010 | Report amendment 1 to the report 31081075.008 to change the applicant address from "3055 Del Sol Boulevard, San Diego, CA 92154 USA" to "401 Mile of Cars Way, Suite 325, National City, CA, 91950 USA" |
| 31081075.012 | New CB report covers the standard upgrade to IEC 60950-1:2005 + Am 1:2009 + Am 2:2013. No additional testing is deemed necessary. |
| Note: Gaps in the report numbering were reserved for TUV internal use, not related to the technical contents of the CB report. | |