**Test Report issued under the responsibility of:**

# TEST REPORT

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

| | |
|---|---|
| **Report Number. .....:** | 1509790STO-001 |
| **Date of issue .....:** | 14 September 2015 |
| **Total number of pages.....** | 88 pages |
| **Applicant's name.....:** | TDK-Lambda Corporation |
| **Address .....:** | 2704-1 Settaya-machi, Nagaoka-shi, Niigata, 940-1195 JAPAN |
| **Test specification:** | |
| **Standard .....:** | IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 |
| **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 |



If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

**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.**

TEST REPORT issued by an Accredited Testing Laboratory. Accredited by Swedac, no 1003, ISO/IEC 17025.

**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 ..... : | AC-DC Converters |
| Trade Mark ..... : | **TDK-Lambda** |
| Manufacturer ..... : | TDK-Lambda Corporation |
| Model/Type reference ..... : | PFE300*-**, PFE500*-**, PFE700*-**, PFE500S-48/ECO (see also "*Models*" page 4) |
| Ratings ..... : | AC input: 100-240V~, 5-11A, 50/60Hz<br>DC output: 12-51V⎓ , 6.3-42A (see also "*Models*" page 4) |

| | | | |
|---|---|---|---|
| **Testing procedure and testing location:** | | | |
| ☒ | **CB Testing Laboratory:** | **Intertek Semko AB** | |
| Testing location/ address ..... : | | Torshamnsgatan 43, P.O. Box 1103,<br>SE-164 22 Kista, SWEDEN | |
| ☐ | **Associated CB Testing Laboratory:** | | |
| Testing location/ address ..... : | | | |
| Tested by (name + signature) ..... : | | Bedran Nergiz | Bedran Nergiz |
| Approved by (name + signature) ..... : | | Anna Karin Cedergren | Cedergren |
| ☐ | **Testing procedure: TMP/CTF Stage 1:** | | |
| Testing location/ address ..... : | | | |
| Tested by (name + signature) ..... : | | | |
| Approved by (name + signature) ..... : | | | |
| ☐ | **Testing procedure: WMT/CTF Stage 2:** | | |
| Testing location/ address ..... : | | | |
| Tested by (name + signature) ..... : | | | |
| Witnessed by (name + signature) ..... : | | | |
| Approved by (name + signature) ..... : | | | |
| ☐ | **Testing procedure:<br>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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| **Summary of testing:** | |
|---|---|
| **Tests performed** (name of test and test clause):<br>See test report | **Testing location:**<br>See page 2 |

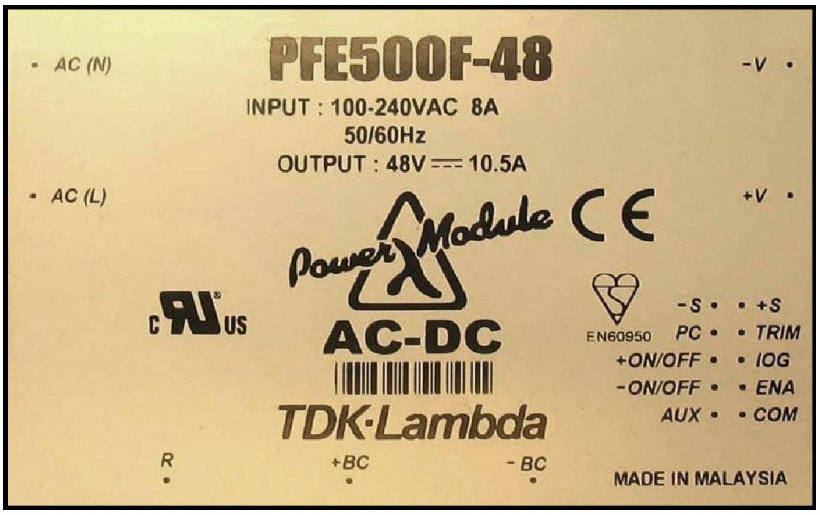
**Summary of compliance with National Differences:**

☒ The product fulfils the requirements of EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013.

Group- and national differences for the CENELEC countries have been considered during the testing.

**Copy of marking plate:** (example)

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.



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| Models included within the scope of this report | | | | |
|---|---|---|---|---|
| Model | Input, AC | | Output, DC | |
| - | V | $A_{max}$ | V | $A_{max}$ |
| PFE300-12 | 100-240 | 5 | 12 | 25 |
| PFE300-28 | 100-240 | 5 | 28 | 10.8 |
| PFE300-48 | 100-240 | 5 | 48 | 6.3 |
| PFE300S-12 | 100-240 | 5 | 12 | 25 |
| PFE300S-28 | 100-240 | 5 | 28 | 10.8 |
| PFE300S-48 | 100-240 | 5 | 48 | 6.3 |
| PFE500-12 | 100-240 | 7 | 12 | 33 |
| PFE500-28 | 100-240 | 8 | 28 | 18 |
| PFE500-48 | 100-240 | 8 | 48 | 10.5 |
| PFE500S-12 | 100-240 | 7 | 12 | 33 |
| PFE500S-28 | 100-240 | 8 | 28 | 18 |
| PFE500S-48 | 100-240 | 8 | 48 | 10.5 |
| PFE500F-12 | 100-240 | 8 | 12 | 42 |
| PFE500F-28 | 100-240 | 8 | 28 | 18 |
| PFE500F-48 | 100-240 | 8 | 48 | 10.5 |
| PFE700-48 | 100-240 | 11 | 51 | 14 |
| PFE700S-48 | 100-240 | 11 | 51 | 14 |
| PFE500S-48/ECO | 100-240 | 8 | 48 | 7.2 |
| All models may include suffix /T which indicates no threads in the corner studs.<br>All models may include suffix /FG which indicates the removal of secondary to earth capacitors to allow an electric strength test of 1500Vdc between the secondary output and earth.<br>Any combination of suffix maybe used. | | | | |



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| **Test item particulars.....:** | |
|---|---|
| Equipment mobility.....: | [] movable [] hand-held [] transportable<br>[] stationary [x] for building-in [] direct plug-in |
| Connection to the mains.....: | [] pluggable equipment [] type A [] type B<br>[] permanent connection<br>[] detachable power supply cord<br>[] non-detachable power supply cord<br>[x] not directly connected to the mains |
| Operating condition.....: | [x] continuous<br>[] rated operating / resting time: |
| Access location .....: | [] operator accessible<br>[] restricted access location<br>[x] for building into a host equipment |
| Over voltage category (OVC) .....: | [] OVC I [x] OVC II [] OVC III [] OVC IV<br>[] other: |
| Mains supply tolerance (%) or absolute mains supply values .....: | ± 10% (By request of the manufacturer) |
| Tested for IT power systems .....: | [] Yes [x] No |
| IT testing, phase-phase voltage (V) .....: | N/A |
| Class of equipment .....: | [x] Class I [] Class II [] Class III<br>[] Not classified |
| Considered current rating of protective device as part of the building installation (A) .....: | 16 |
| Pollution degree (PD) .....: | [] PD 1 [x] PD 2 [] PD 3 |
| IP protection class .....: | IPX0 |
| Altitude during operation (m) .....: | <2000 |
| Altitude of test laboratory (m) .....: | <2000 |
| Mass of equipment (kg) .....: | <1kg |
| 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.....: | See "*General remarks*" below |
| Date of receipt of test item.....: | - |
| Date (s) of performance of tests.....: | - |
| | |
| **General remarks:** | |

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
The test results and all data in this report are derived from previously issued Test Report No. **1017657** dated 8 August 2010, Test Report No. **1116717** dated 20 June 2011 and Test Report No. **1218116** dated 22 August 2012, issued by Intertek Semko AB. A new report has been issued due to update of the standard IEC 60950-1, to include Am 2: 2013.
No additional test has been conducted.
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.



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| **Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:** | |
|---|---|
| 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 .....: | ☒ Yes<br>☐ Not applicable |
| When differences exist; they shall be identified in the "*General product information"* section. | |
| **Name and address of factories..... :** | TDK-Lambda (Malaysia) Sdn. Bhd.<br>PLO33 Locked Bag No. 110<br>Kawasan Perindustrian<br>Senai 81400 Senai Johor, Darul Takzim,<br>**MALAYSIA**<br><br>TDK-Lambda Corporation<br>Nagaoka Technical Center<br>2704-1 Settaya-machi, Nagaoka, Niigata<br>940-1195, **JAPAN**<br><br>Wuxi TDK-Lambda Electronics Co., Ltd.<br>No.6 Xing Chuang Er lu Wuxi Jiangsu,<br>214028, **CHINA** |

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)

This Test Report replaces previously issued, see table below.

**REVISION TABLE**

| Date | Report ref. | Clause | Modification of the appliance |
|---|---|---|---|
| 14 Sept. 2015 | 1509790STO-001 | - | Basic Test Report |



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**General Product Information:**

a. This product is an AC to DC power module converter.
b. As a component part, compliance with the standard will be based upon installation in the final application. This product must be installed within a host equipment. These AC to DC converters have reinforced insulation between the input and the output. The outputs of these products are energy hazards. All models with an output greater than 28V are considered to be non-SELV. As such, the instructions for use must refer to these energy hazardous outputs and non-SELV outputs in that the outputs must not be accessible to the operator. The installer must also provide protection against inadvertent contact by a service engineer.
c. All dynamic testing was conducted with the units loaded to their specified output current. All external components were fitted in accordance with the manufacturers instructions.
d. These products, with the exception of the PFE500F-12, can be used in any orientation providing the baseplate temperature does not exceed 100°C and is subject to a derating curve. The PFE500F-12 has a maximum baseplate temperature of 85°C. This temperature limit governs the maximum working ambient temperature.
e. The input and output connectors are not acceptable for use as field wiring terminals.
f. The baseplate must be properly bonded to the main protective earthing contact in the end use product.
g. The recommended input fuse rating is as follows: - F15AH, 250V. The breaking capacity and voltage rating of this fuse may be subject to the end use application.
h. To maintain the SELV output under fault conditions for outputs less than 28V, the output must be connected to earth in the final application.



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