



Test Report issued under the responsibility of:



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

**Report Number** ..... : 1510055STO-001  
**Date of issue** ..... : 29 October 2015  
**Total number of pages** ..... : 83 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

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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.**

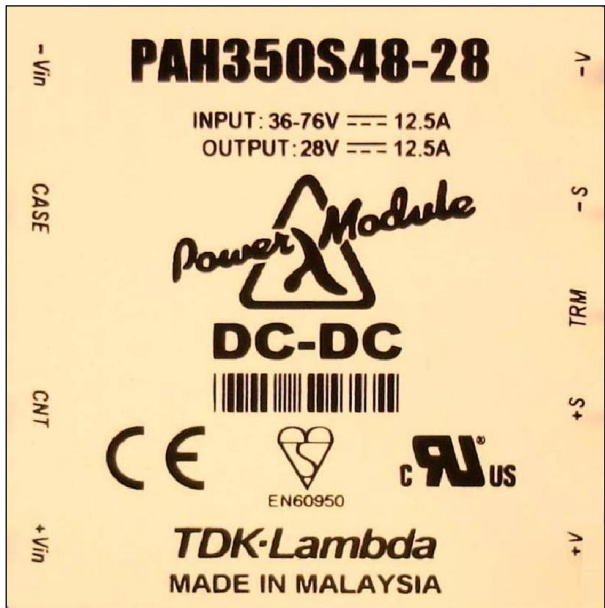
TEST REPORT issued by an Accredited Testing Laboratory. Accredited by Swedac, no 1003, ISO/IEC 17025.

**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.

<b>Test item description</b> .....	DC-DC Converters
<b>Trade Mark</b> .....	<b>TDK-Lambda</b>
<b>Manufacturer</b> .....	TDK-Lambda Corporation
<b>Model/Type reference</b> .....	PAH250S48-**, PAH300S48-**, PAH350S48-** (see also "Models" page 7)
<b>Ratings</b> .....	DC input: 36-76V <sup>~</sup> (see also "Models" page 7)

<b>Testing procedure and testing location:</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	<b>Intertek Semko AB</b>
Testing location/ address .....		Torshamnsgatan 43, P.O. Box 1103, SE-164 22 Kista, SWEDEN
<input type="checkbox"/>	<b>Associated CB Testing Laboratory:</b>	
Testing location/ address .....		
Tested by (name + signature) .....		Bedran Nergiz 
Approved by (name + signature).....		Anna Karin Cedergren 
<input type="checkbox"/>	<b>Testing procedure: TMP/CTF Stage 1:</b>	
Testing location/ address .....		
Tested by (name + signature) .....		
Approved by (name + signature).....		
<input type="checkbox"/>	<b>Testing procedure: WMT/CTF Stage 2:</b>	
Testing location/ address .....		
Tested by (name + signature) .....		
Witnessed by (name + signature) .....		
Approved by (name + signature).....		
<input type="checkbox"/>	<b>Testing procedure: SMT/CTF Stage 3 or 4:</b>	
Testing location/ address .....		
Tested by (name + signature) .....		
Witnessed by (name + signature) .....		
Approved by (name + signature).....		
Supervised by (name + signature) .....		

<b>Summary of testing:</b>	
<b>Tests performed</b> (name of test and test clause): See test report	<b>Testing location:</b> See page 2
<b>Summary of compliance with National Differences:</b> <input checked="" type="checkbox"/> 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.	
<b>Copy of marking plate:</b> (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.	
	

<b>Test item particulars.....:</b>	
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 type="checkbox"/> restricted access location <input checked="" type="checkbox"/> for building into a host equipment
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 .....	Not applicable, Voltage range 36-76Vdc max.
Tested for IT power systems .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V) .....	N/A
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) .....	See "General product information"
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) .....	<2000
Altitude of test laboratory (m) .....	<2000
Mass of equipment (kg) .....	<0.100
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.....	See "General remarks" below
Date (s) of performance of tests.....	See "General remarks" below
<b>General remarks:</b>	
<p>"(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. 1017509 dated 5 August 2010, and Test Report No. 1218090 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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	

<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC60950:</b>			
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 checked="" type="checkbox"/> Yes <input type="checkbox"/> Not applicable		
When differences exist; they shall be identified in the " <i>General product information</i> " section.			
<b>Name and address of factories..... :</b> TDK-Lambda (Malaysia) Sdn. Bhd. PLO33 Locked Bag No. 110 Kawasan Perindustrian Senai 81400 Senai Johor, Darul Takzim, <b>MALAYSIA</b>  TDK-Lambda Corporation Nagaoka Technical Center 2704-1 Settaya-machi, Nagaoka, Niigata 940-1195 <b>JAPAN</b>  Wuxi TDK-Lambda Electronics Co., Ltd. No.6 Xing Chuang Er lu Wuxi Jiangsu, 214028 <b>CHINA</b>			
<b>Abbreviations used in the report:</b>			
- 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
29 Oct. 2015	1510055STO-001	-	Basic Test Report

**General Product Information:**

- a) 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 and only be accessible to authorised competent personnel.
- b) This power supply baseplate shall be properly bonded to earth ground in the end use product as this unit was investigated for Class I construction.
- c) Transformer T101 uses a layered PCB type of construction. T101 temperatures are restricted to the PCB rating of 130 degrees Celsius. It must be ensured that the baseplate temperature does not exceed 100 degrees Celsius. This temperature limit governs the working ambient temperature.
- d) The input to the units must be isolated from the mains by reinforced insulation in accordance with EN60950-1 and IEC60950-1 in order to maintain a SELV output. The SELV output is classed as an energy hazard and must not be accessible to the operator in the final end product.
- e) The recommended input fuse rating within the instructions and that used for all tests is as follows: - PAH300S48, 250V, F15A HBC fast acting fuse. PAH350S48, 250V, F20A HBC fast acting fuse. The breaking capacity and voltage rating of this fuse may be subject to the end use application.
- f) The units have been evaluated for use in a Pollution Degree 2 environment. The PWB used in these products is assumed material group IIIB.
- g) The input and output connectors are not acceptable for field wiring connections and are only intended for connection to a PWB inside the end use equipment.
- h) These products were assessed for basic insulation at working voltage between input and output. All faults testing across the barriers were conducted under all input and output earth combinations.

**Testing Environment:**

Ambient temperature: 15°C to 30°C

Relative humidity: 25% to 75%

Air pressure: 86 kPa to 106 kPa