

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

**Report Number**.....: **1017525**

**Date of issue**.....: 25 August 2010

**Total number of pages**..... 62

**CB Testing Laboratory** .....: **Intertek Semko AB**

**Address**.....: Torshamnsgatan 43, P.O. Box 1103, SE-164 22 Kista, SWEDEN

**Applicant's name** .....: **TDK-LAMBDA Corp Nagaoka Technical Center**

**Address**.....: 2701 Togawa Settaya Nagaoka-shi, Niigata 940-1195 JAPAN

**Manufacturer's name**.....: **TDK-Lambda Corporation**

**Address**.....: 2701 Togawa Settaya Nagaoka-shi, Niigata 940-1195 JAPAN

**Test specification:**

**Standard** .....: **IEC 60950-1:2005 (2:nd Edition); Am 1:2009**

**Test procedure**.....: CB Scheme

**Non-standard test method**.....: N/A

**Test Report Form No.** .....: **IEC60950\_1B**

**Test Report Form(s) Originator** .....: SGS Fimko Ltd

**Master TRF** .....: Dated 2010-04

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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 item description**.....: DC-DC Converters



**Trade Mark** .....: **TDK-Lambda**

**Manufacturer**.....: TDK-Lambda Corporation

**Model/Type reference**.....: PAH65D48-\*\*\*\*

(See page 4)

**Ratings**.....: - (DC 36-76V in user instructions)

<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 Laboratory:</b>	
Testing location/ address..... :		
Tested by (name + signature) .....		Henrik Brolin 
Approved by (name + signature).....		Kjell Fredriksson 
<input type="checkbox"/>	<b>Testing procedure: TMP</b>	
Testing location/ address..... :		
Tested by (name + signature) .....		
Approved by (name + signature).....		
<input type="checkbox"/>	<b>Testing procedure: WMT</b>	
Testing location/ address..... :		
Tested by (name + signature) .....		
Witnessed by (name + signature) .....		
Approved by (name + signature).....		
<input type="checkbox"/>	<b>Testing procedure: SMT</b>	
Testing location/ address..... :		
Tested by (name + signature) .....		
Approved by (name + signature).....		
Supervised by (name + signature) .....		
<input type="checkbox"/>	<b>Testing procedure: RMT</b>	
Testing location/ address..... :		
Tested by (name + signature) .....		
Approved by (name + signature).....		
Supervised by (name + signature) .....		

**List of Attachments (including a total number of pages in each attachment):**

Page 1-50	IEC 60950-1 Test Report.
Page 51-61	European group differences and national differences
Page 62-62	Appendix Photos

**Summary of testing:****Tests performed (name of test and test clause):**

See test report

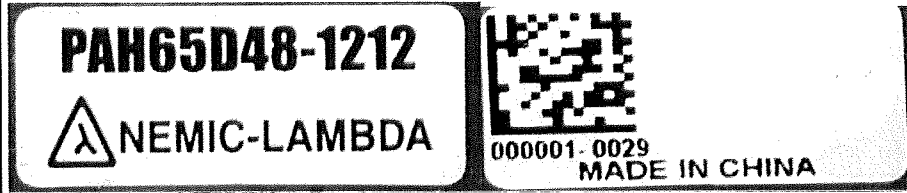
**Testing location:**

See page 2

**Summary of compliance with national differences**

Group differences and national differences for the CENELEC countries according to:  
EN 60950-1:2006 /A11:2009/A1:2010 have been checked and verified.

**Copy of marking plate**



Note. New manufacturer name:TDK-Lambda.

**Models included within the scope of this report**

Model	Input		Output			
	V dc	A (typical)	V dc	A	V dc	A
PAH65D48-5050	36-76	1.56 at 48V	5.08	6.5	-5.08	6.5
PAH65D48-1212	36-76	1.56 at 48V	12.1	2.7	-12.1	2.7

**Test item particulars .....**

Equipment mobility .....:  movable  hand-held  transportable  
 stationary  for building-in  direct plug-in

Connection to the mains .....:  pluggable equipment  type A  type B  
 permanent connection  
 detachable power supply cord  
 non-detachable power supply cord  
 not directly connected to the mains

Operating condition.....:  continuous  
 rated operating / resting time:

Access location .....:  operator accessible  
 restricted access location  
 for building into a host equipment

Over voltage category (OVC) .....:  OVC I  OVC II  OVC III  OVC IV  
 other:

Mains supply tolerance (%) or absolute mains supply values .....: Not applicable, Voltage range 36-76Vdc Max.

Tested for IT power systems .....:  Yes  No

TRF No. IEC60950\_1B

IT testing, phase-phase voltage (V) .....	N/A
Class of equipment .....	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input checked="" type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A) .....	N/A (for building-in)
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) .....	0.025
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object .....	N/A (or N)
- test object does meet the requirement .....	P (Pass)
- test object does not meet the requirement .....	F (Fail)
<b>Testing</b> .....	
Date of receipt of test item.....	-
Date(s) of performance of tests.....	-
<b>General remarks:</b>	
<p>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 testing laboratory.                  "(see Enclosure #)" refers to additional information appended to the report.                  "(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>	
<b>Manufacturer's Declaration per sub-clause 6.2.5 of IEC60950-1:</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 .....	Comment: Will be provided by the manufacturer upon requesting by the authorities.
When differences exist; they shall be identified in the General product information section.	
<b>Name and address of factory (ies) .....</b>	<b>TDK-Lambda (Malaysia) Sdn. Bhd.</b> PLO33 Locked Bag No. 110, Kawasan Perindustrian Senai 81400 Senai Johor, Darul Takzim, MALAYSIA
	<b>TDK-Lambda Corporation</b> Nagaoka Technical Center 2701 Togawa, Settaya, Nagaoka, Niigata, 940-1195, JAPAN
	<b>Wuxi TDK-Lambda Electronics Co., Ltd.</b> Lot 107 Wuxi Singapore Ind. Park, Xing Chuang Erlu Wuxi Jiangsu, 214028, CHINA

**General Product Information:**

Test results in this report are based on the previously issued test reports from BSI with ref. Nos. 249/4575183. Based on reports from SET Laboratory with report number SMTN0103.

A new test report has been issued due to the upgrade of test standard and some minor editorial modifications.

- a) As a component part, compliance with the standard will be based upon installation in the final application. These products are intended for installation within other equipment.
- b) The units have been evaluated for use in a Pollution Degree 2 environment. The PWB in the products is assumed to be material group IIIB.
- c) 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.
- d) 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.
- e) The input fuse rating used during testing was:- F5AH, 250V. The breaking capacity and voltage rating are subject to the end use application.
- f) These products were assessed for basic insulation at working voltage between input and output. All fault testing across the barriers was conducted under all input and output earth combinations.
- g) These models have been evaluated at the maximum ambient allowed, whilst mounted on a PWB. It must be ensured Q101 and Q201 do not exceed 130°C (maximum PWB rating) during normal operation. These limits govern the operating ambient.
- h) All outputs are SELV except when an input voltage of greater than 54Vdc is applied, non SELV voltages can be seen as follows:-  
If the input positive terminal and the output positive terminal are earthed, the voltage across the output can become non-SELV when a fault is applied across the basically insulated barrier. It must be ensured the input positive terminal and the output positive terminal are NOT earthed at the same time.

**Testing Environment:**

- An ambient temperature in the range 15°C to 25°C
- A relative humidity in the range 25% to 75%
- An air pressure in the range 86 kPa to 106 kPa